

IN THE CLAIMS:

1. (Currently Amended) A device for protection against voltage surges, comprising:
a first connecting electrode in electrical connection with a first connecting pad,
~~as a~~ second connecting electrode in electrical connection with a second connecting pad,
a third mobile arc switching electrode electrically connected to the second connecting pad,

an arc chute opening ~~out~~ onto the first and second connecting electrodes,

means for driving the mobile arc switching electrode with respect to the first connecting electrode from an operating position to a switching position moving away from the first connecting electrode and moving towards the second connecting electrode, so that an electric arc drawn between the first connecting electrode and the mobile arc switching electrode switches between the first connecting electrode and the second connecting electrode when the mobile arc switching electrode moves from the operating position to the switching position,

an electrical ignition means connected so that when the mobile arc switching electrode is in the operating position, the electrical ignition means is connected ~~to~~ in series between the arc switching electrode ~~on the one hand and to the first or second connecting pads~~ pad ~~on the other hand~~, and that when the mobile arc switching electrode is in the switching position and an electric arc is drawn between the first connecting electrode and the second connecting electrode, the electrical ignition means is disconnected from the circuit, the electrical ignition means having an ohmic resistance varying inversely with the voltage applied to the electrical ignition means,

the ohmic resistance being high when the voltage is lower than an ignition voltage and decreasing when the voltage increases above the ignition voltage.

2. (Canceled)

3. (Currently Amended) A device according to claim-21, wherein the mobile arc switching electrode in the operating position is in contact with the first connecting electrode.

4. (Canceled).

5. (Currently Amended) A device according to claim 1, additionally comprising electromagnetic induction projection means for inducing electromagnetic forces on an electric arc formed between the first connecting electrode and the mobile arc switching electrode tending either to project the arc to the arc chute or to make the arc switch to the second connecting electrode.

6. (Currently Amended) A device according to claim 1, wherein the driving means comprises electromagnetic induction repulsion means for inducing electromagnetic forces on the mobile arc switching electrode through which a current is flowing tending to drive the mobile arc switching electrode to the switching position.

7. (Currently Amended) A device according to claim 6, wherein the electromagnetic induction repulsion means comprises a magnetic driving circuit for channeling a magnetic flux generated by an electric current flowing between the first connecting pad and the first connecting electrode to the mobile arc switching electrode in the operating position, so that when an electric current flows from the first connecting pad to the mobile arc switching electrode, electromagnetic forces are induced in the mobile arc switching electrode, tending to drive the mobile arc switching electrode to the switching position.

8. (Cancelled)

9. (Currently Amended) A device according to claim 1, wherein the driving means comprises a mechanism equipped with a mobile means for operation between an operating position and a disconnection position, and a kinematic link between the means for operation and the mobile arc switching electrode for driving the mobile arc switching electrode to a disconnected position when the means for operation move from the operating position to the disconnection position.

10. (Currently Amended) A device according to claim 1, wherein the driving means comprises flexible return means for returning the mobile arc switching electrode to the operating position.

11. (Currently Amended) A device according to claim 1, wherein the driving means comprises an energy storage spring for discharging when driving the mobile arc switching electrode from the operating position to the switching position.
12. (Previously Presented) A device according to claim 1, wherein the electrical ignition means comprises a variable resistor.
13. (Previously Presented) A device according to claim 1, wherein one of said first and second connecting pads is for connection to an electric line, and the other of said connecting pads is for connection to earth.
14. (New) A device for protecting electrical devices against voltage surges, comprising:
 - first and second electrical pads, one of which is electrically connected to an electrical line and the other electrically connected to ground,
 - a first electrode connected to said first electrical pad and shaped for directing an electric arc to an arc chute and comprising a fixed electrical contact,
 - a mobile arc switching electrode comprising a second contact for electrically contacting said first contact when said mobile arc switching electrode is in its closed position,
 - a means for driving said mobile arc switching electrode, electrically connected between said first electrode and said first electrical pad,
 - an electrical ignition means electrically connected in series between said mobile arc switching electrode and said second electrical pad, and having an ohmic resistance varying

inversely with the voltage applied to the electrical ignition means, the ohmic resistance being relatively high when the voltage is lower than an ignition voltage, for activating said electrical ignition means, and decreasing when the voltage increases above the ignition voltage, and

a second electrode electrically connected to said second electrical pad and shaped for directing an electric arc to said arc chute,

wherein the electrical ignition means is for directing an electrical current to ground when a relatively small voltage surge occurs on the electrical line,

said means for driving the mobile arc switching electrode is for driving the mobile arc switching electrode when a relatively larger voltage surge occurs on the electrical line, such that said first and second contacts are separated and such electric arc bypasses said electrical ignition means, thereby protecting said electrical ignition means from such relatively larger voltage surge, and

said arc chute is for dissipating an electric arc between said first and second electrodes when a still larger voltage surge occurs on the electric line.

15. (New) A device for protecting electrical devices against voltage surges according to claim 14, wherein the electrical ignition means comprises a spark arrestor and a variable resistor in series and the ignition voltage is the voltage at which current flows across the spark arrestor.

16. (New) A device for protecting electrical devices against voltage surges, comprising:
first and second electrical pads, one of which is electrically connected to an electrical line and the other electrically connected to ground,

a first electrode connected to said first electrical pad and shaped for directing an electric arc to an arc chute and comprising a first electrical contact,

a mobile arc switching electrode comprising a second electrical contact,

a fixed stud between said first electrode and said mobile arc switching electrode for physically contacting said mobile arc switching electrode when said mobile arc switching electrode is in its closed position,

an ignition electrode between said fixed stud and said first electrode,

an ignition circuit electrically connected to said first electrical pad, said fixed stud, and said ignition electrode, for detecting a potential voltage difference between said first electrical pad and said fixed stud and for increasing a voltage at said ignition electrode when such potential voltage difference is relatively high, triggering an arc between said first electrode and said mobile arc electrode,

a means for driving said mobile arc switching electrode, electrically connected between said first electrode and said first electrical pad,

an electrical ignition means electrically connected in series between said mobile arc switching electrode and said second electrical pad, and having an ohmic resistance varying inversely with the voltage applied to the electrical ignition means, and

a second electrode electrically connected to said second electrical pad and shaped for directing an electric arc to said arc chute,

wherein the electrical ignition means is for directing an electrical current to ground when a relatively small voltage surge occurs on the electrical line,

said means for driving the mobile arc switching electrode is for driving the mobile arc switching electrode when a relatively larger voltage surge occurs on the electrical line, such that said second contact is separated from said fixed stud and such electric arc bypasses said electrical ignition means, thereby protecting said electrical ignition means from such relatively larger voltage surge, and

said arc chute is for dissipating an electric arc between said first and second electrodes when a still larger voltage surge occurs on the electric line.

17. (New) A device for protecting electrical devices against voltage surges, comprising:

first and second electrical pads, one of which is connected to an electrical line and the other connected to ground,

a first electrode connected to said first electrical pad and shaped for directing an electric arc to an arc chute and comprising a first electrical contact,

a mobile arc switching electrode comprising a second electrical contact,

a fixed stud between said first electrode and said mobile arc switching electrode for physically contacting said mobile arc switching electrode when said mobile arc switching electrode is in its closed position,

an ignition electrode between said fixed stud and said first electrode, and

an ignition circuit electrically connected to said first electrical pad, said fixed stud, and said ignition electrode, for detecting a potential voltage difference between said first electrical pad and said fixed stud and for increasing a voltage at said ignition electrode when such voltage

difference is relatively high, triggering an arc between said first electrode and mobile arc electrode,

a means for driving said mobile arc switching electrode, electrically connected between said first electrode and said first electrical pad,

an electrical ignition means electrically connected in series between said first electrode and said fixed stud, and having an ohmic resistance varying inversely with the voltage applied to the electrical ignition means, and

a second electrode electrically connected to said second electrical pad and shaped for directing an electric arc to said arc chute,

wherein the electrical ignition means is for directing an electrical current to ground via said mobile arc switching electrode and said second electrical pad when a relatively small voltage surge occurs on the electrical line,

said means for driving the mobile arc switching electrode is for driving the mobile arc switching electrode when a relatively larger voltage surge occurs on the electrical line, such that said second contact is separated from said fixed stud and such electric arc bypasses said electrical ignition means, thereby protecting said electrical ignition means from such relatively larger voltage surge, and

said arc chute is for dissipating an electric arc between said first and second electrodes when a still larger voltage surge occurs on the electric line.